1 Deber

Comprobar si la función es una solución explícita o implícita de la ecuación diferencial dada.

$y'' - y' + y = 0$

$$y = C_1 e^{\frac{x}{2}} \cos\left(x\frac{\sqrt{3}}{2}\right) + C_2 e^{\frac{x}{2}} \operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right)$$

$$y' = C_1\left[e^{\frac{x}{2}}\left(-\operatorname{Sen} x\frac{\sqrt{3}}{2}\right)\frac{\sqrt{3}}{2} + \cos x\frac{\sqrt{3}}{2}\, e^{\frac{x}{2}}\cdot\frac{1}{2}\right] + C_2\left[e^{\frac{x}{2}}\cos\left(x\frac{\sqrt{3}}{2}\right)\frac{\sqrt{3}}{2} + \operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right)e^{\frac{x}{2}}\cdot\frac{1}{2}\right]$$

$$y' = C_1\left[-\frac{\sqrt{3}}{2}e^{\frac{x}{2}}\operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right) + \frac{1}{2}e^{\frac{x}{2}}\cos\left(x\frac{\sqrt{3}}{2}\right)\right] + C_2\left[\frac{\sqrt{3}}{2}e^{\frac{x}{2}}\cos\left(x\frac{\sqrt{3}}{2}\right) + \frac{1}{2}e^{\frac{x}{2}}\operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right)\right]$$

$$y'' = -\frac{\sqrt{3}}{2}C_1\left[e^{\frac{x}{2}}\cos\left(x\frac{\sqrt{3}}{2}\right)\frac{\sqrt{3}}{2} + \operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right)e^{\frac{x}{2}}\cdot\frac{1}{2}\right] + \frac{1}{2}C_1\left[e^{\frac{x}{2}}\cdot -\operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right)\frac{\sqrt{3}}{2} + \cos\left(x\frac{\sqrt{3}}{2}\right)e^{\frac{x}{2}}\cdot\frac{1}{2}\right]$$

$$+\frac{\sqrt{3}}{2}C_2\left[e^{\frac{x}{2}}\cdot -\operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right)\frac{\sqrt{3}}{2} + \cos\left(x\frac{\sqrt{3}}{2}\right)e^{\frac{x}{2}}\cdot\frac{1}{2}\right] + \frac{1}{2}C_2\left[e^{\frac{x}{2}}\cos\left(x\frac{\sqrt{3}}{2}\right)\frac{\sqrt{3}}{2} + \operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right)e^{\frac{x}{2}}\cdot\frac{1}{2}\right]$$

$$-\frac{3}{4}C_1e^{\frac{x}{2}}\cos\left(x\frac{\sqrt{3}}{2}\right) - \frac{\sqrt{3}}{4}C_1e^{\frac{x}{2}}\operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right) - \frac{\sqrt{3}}{4}C_1e^{\frac{x}{2}}\operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right) + \frac{1}{4}C_1e^{\frac{x}{2}}\cos\left(x\frac{\sqrt{3}}{2}\right) - \frac{3}{4}C_2e^{\frac{x}{2}}\operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right)$$

$$+\frac{\sqrt{3}}{4}C_2\cos\left(x\frac{\sqrt{3}}{2}\right) + \frac{\sqrt{3}}{4}C_2e^{\frac{x}{2}}\cos\left(x\frac{\sqrt{3}}{2}\right) + \frac{1}{4}C_2e^{\frac{x}{2}}\operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right) + \frac{\sqrt{3}}{2}C_1e^{\frac{x}{2}}\operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right) - \frac{1}{2}C_1e^{\frac{x}{2}}\cos\left(x\frac{\sqrt{3}}{2}\right)$$

$$-\frac{\sqrt{3}}{2}C_2e^{\frac{x}{2}}\cos\left(x\frac{\sqrt{3}}{2}\right) - \frac{1}{2}C_2e^{\frac{x}{2}}\operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right) + C_1e^{\frac{x}{2}}\cos\left(x\frac{\sqrt{3}}{2}\right) + C_2e^{\frac{x}{2}}\operatorname{Sen}\left(x\frac{\sqrt{3}}{2}\right)$$

$$0 = 0$$